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09/818,304	03/27/2001	Kyu Takada	15162/03140	1657

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EXAMINER
MARTINEZ, JOSEPH P

ART UNIT	PAPER NUMBER
2873	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/818,304	Applicant(s) TAKADA, KYU
	Examiner Joseph Martinez	Art Unit 2873

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,7,9,10,13,16,19 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,7,9,10,13,16,19 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, 3-4, 7, 9-10, 13, 16, 19 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 7, 9, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brommer et al. (5389943) in view of Grann et al. (6035089).

Re claim 1, Brommer et al. teach for example, an optical device (dielectric structure 20, fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11) comprising: a first medium (high-dielectric background material 24, fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11) having a thickness, the first medium defining a plurality of periodically spaced hollow portions (elongated elements 22, fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11); and a second medium (elongated elements 22 made up of non-conductive low-dielectric material, fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11), being dispersed within the hollow portions formed in the first medium, wherein a first layer of the device forms a photonic crystal, but fail to implicitly teach the hollow portions having a depth less than the thickness of the first medium, the first medium having a depth identical to the depth of the hollow portions, and wherein a second layer of the device is formed entirely of the first medium. However, Grann et al. teach for example, the hollow portions having a depth less than the thickness of the first

medium (resonant structure 310, fig. 3) and wherein a second layer of the device is formed entirely of the first medium, but fail to implicitly teach the first medium having a depth identical to the depth of the hollow portions. However, the office interprets "manipulating any of the resonant structure's parameters" (col. 4, ln. 10-13) as taught by Grann et al. to teach the varying depth of each structure, layer or medium. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical filter of Brommer et al. with the structure of Grann et al. in order to provide a system with the advantages of narrowband filter capabilities, minimal sideband reflections spatial control high packing density and tunability.

Re claim 7, Brommer et al. further teach for example, an optical device comprising: a first medium having a thickness, the first medium at least partially forming a first layer and a second layer of the optical device, the first layer having a plurality of periodically spaced protruding portions surrounded by hollow portions; and a second medium being dispersed within the hollow portions surrounding the plurality of periodically spaced protruding portions of the first layer wherein the first layer is a photonic crystal, and the second layer is formed entirely of the first medium (fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11), but fail to implicitly teach the hollow portions having a depth less than the thickness of the first medium and the first layer having a depth identical to the depth of the hollow portions. However, Grann et al. teach for example, the hollow portions having a depth less than the thickness of the first medium (resonant structure 310, fig. 3), but fail to implicitly teach the first medium having a depth identical to the depth of the hollow portions. However, the office interprets "manipulating any of the resonant structure's parameters" (col. 4, ln. 10-13) as taught by Grann et al. to teach the varying depth of each

structure, layer or medium. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical filter of Brommer et al. with the structure of Grann et al. in order to provide a system with the advantages of narrowband filter capabilities, minimal sideband reflections spatial control high packing density and tunability.

Re claim 19, Brommer et al. further teach for example, an optical device comprising: a first medium having a thickness, the first medium at least partially forming a first layer and second layer of the optical device, the first layer defining a plurality of periodically spaced hollow portions, the hollow portions having a depth less than the thickness of the first medium, the first layer having a depth identical to the depth of the hollow portions; and a second medium being dispersed within the hollow portions, wherein the first layer of the optical device forms a photonic crystal, and wherein the second layer of the device is formed at least partially of the first medium (fig. 1, col. 1, ln. 63-68, col. 2, ln. 1-11), but fail to implicitly teach the first medium at least forming an integrated first layer, the hollow portions having a depth less than the thickness of the first medium and the first layer having a depth identical to the depth of the hollow portions. However, Grann et al. teach for example, the first medium at least forming an integrated first layer (fig. 3) and the hollow portions having a depth less than the thickness of the first medium (resonant structure 310, fig. 3), but fail to implicitly teach the first medium having a depth identical to the depth of the hollow portions. However, the office interprets "manipulating any of the resonant structure's parameters" (col. 4, ln. 10-13) as taught by Grann et al. to teach the varying depth of each structure, layer or medium. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical filter of Brommer et al. with the structure of Grann et al. in order to provide a system with the advantages

of narrowband filter capabilities, minimal sideband reflections spatial control high packing density and tunability.

Re claims 3, 9 and 21, supra claims 1, 7 and 19, respectively. Grann et al. further teach for example, the index of refraction of the second medium is greater than the index of refraction of the first medium (col. 3, ln. 62-65).

Claims 4,10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grann et al.

Re claims 4,10, 13 and 16, Grann et al. teach for example, a device or method of manufacturing an optical device having a first layer functioning as an optical waveguide layer (planar waveguide 320, fig. 3) and a second layer functioning as a base layer (substrate 340, fig. 3), the method comprising the steps of: providing a resist layer on a surface of a first medium; removing portions of the resist layer to form vacancies; removing portions of the first medium corresponding to the vacancies to create cavities in the first medium, the depth of the cavities being less than a thickness of the first medium, and thereby defining the first layer and second layer, filling the cavities in the first medium with a second medium, thereby forming the optical waveguide layer (col. 4, ln. 15-32), wherein the index of refraction of the second medium is greater than the index of refraction of the first medium (col. 3, ln. 62-65), but fail to implicitly teach removing the resist layer and any excess film of the second medium from the surface of the first medium. However, the office interprets "polishing the surface flat to eliminate any surface irregularities caused during the deposition" (col. 4, ln. 30-32) to include removing excess film and resist layer. Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to remove any excess film or resist layer in order to allow the optical filter to perform properly and prevent light from being redirected in an errant manner.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Martinez whose telephone number is 703-305-0577. The examiner can normally be reached on M-F 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4883.

JPM
May 27, 2003

Hung Xuan Dang
Primary Examiner